DOE Grant DE-FG02-97-ER45627 "Completion of an Undulator-Based X-ray Scattering Facility for Materials Research on Complex Fluids"

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1. Final Technical report: Two end-station instruments were built as proposed. The liquid-surface scattering spectrometer was commissioned and has been fully operational on Sector 9 at the Advanced Photon Source, Argonne National Laboratory (APS/ANL). Similarly, the Small-Angle Scattering Spectrometer was also commissioned and has been fully operational on Sector 9 at APS/ANL. The latter now includes ultra small-angle scattering capability. Both end-station instruments employ 1-D position-sensitive proportional counter detectors while the small-angle scattering instrument also employs both CCD and 2-D proportional counter detectors. The scientific productivity of these two instruments is significant and growing steadily. The monochromator for the secondary undulator beamline has been designed and its construction is about to commence. Otherwise, all other components for the secondary undulator beamline have been completed, including the doubly-focusing x-ray optics. There was a delay in proceeding with the monochromator for the secondary undulator beamline while the possibility of a second independent undulator at Sector 9 straight section was assessed. (This has been detailed in the annual Field Work Proposals from the CMC. It was decided that this possibility was too remote and the CMC is proceeding as indicated and as proposed originally. Currently, we've just reached the point of over-subscription for beamtime for the three instruments (including the above-mentioned plus a 6-circle diffractometer) on the primary undulator beamline. The demand for the secondary undulator beamline is now apparent.

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